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L3: Entry 230 of 233

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TITLE: CALIBRATING METHOD FOR SURFACE TEMPERATURE OF STEEL PLATE

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ABSTRACT:

PURPOSE: To make it possible to accurately calibrate a value of temperature obtained by a thermocouple, by seeking a radiation energy from a steel plate at the time when a difference, which is obtained by subtracting an amount of direct incidence from a sum of an amount of direct incident to a radiometer and an amount of incidence after reflection on a mirror surface, takes the maximum value, and then, by obtaining a real steel plate surface temperature by using a prescribed equation.

CONSTITUTION: A radiometer 12 and a reflector 14 are arranged on a heated steel plate 10, which is an object of temperature measurement, in such a manner that energy radiated from the steel plate enters the radiometer directly and also indirectly after reflecting upon the reflector and surface of the object. By measuring E_1 , which is the radiation energy, and E_2 , which is a sum of the E_1 and a radiation energy entering after the reflections, and also by changing the rate of radiation from the steel plate surface while keeping the steel plate temperature constant, the radiating energy E_1 at the time when a difference $\Delta E = E_2 - E_1$ is the maximum is sought, and by using a relative equation $E_b T = 2/r \cdot E_1^*$ (r in the equation signifies permeability of filters 18 and 20) between the value E_1^* and a blackbody radiating energy, a surface temperature T of the steel plate is sought. And, a thermocouple 24 is installed in the neighborhood of the steel plate temperature measuring section to obtain an indicative temperature T , and a temperature T_a is calibrated by the temperature T .

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